The World Bank

ICT in Transport Sector: Towards effective Governance

by
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e- Government Practice - ISG
The World Bank

E- Governance - Lessons

Transport Projects - Key Components

- Network of Roads & Bridges (New / Upgrade / Widen)
  - Land acquisition & resettlement
  - Environment Control
  - Civil Works
- Road maintenance

  (Conventional / Performance based / Technical Reviews)
- Traffic Management
- Safety & Accident control
- Financing Models (Fund / PPP/ Toll etc)

E- Governance - Lessons

Benefits

- *Improvement in Traffic conditions*
- *Transit time reduction*
- *Transport Prices reduction*
- *Road safety*
- *Others*
  - *Poverty reduction, Labour migration, Livelihood diversification, Women participation, Industrial growth, Tourism etc.*

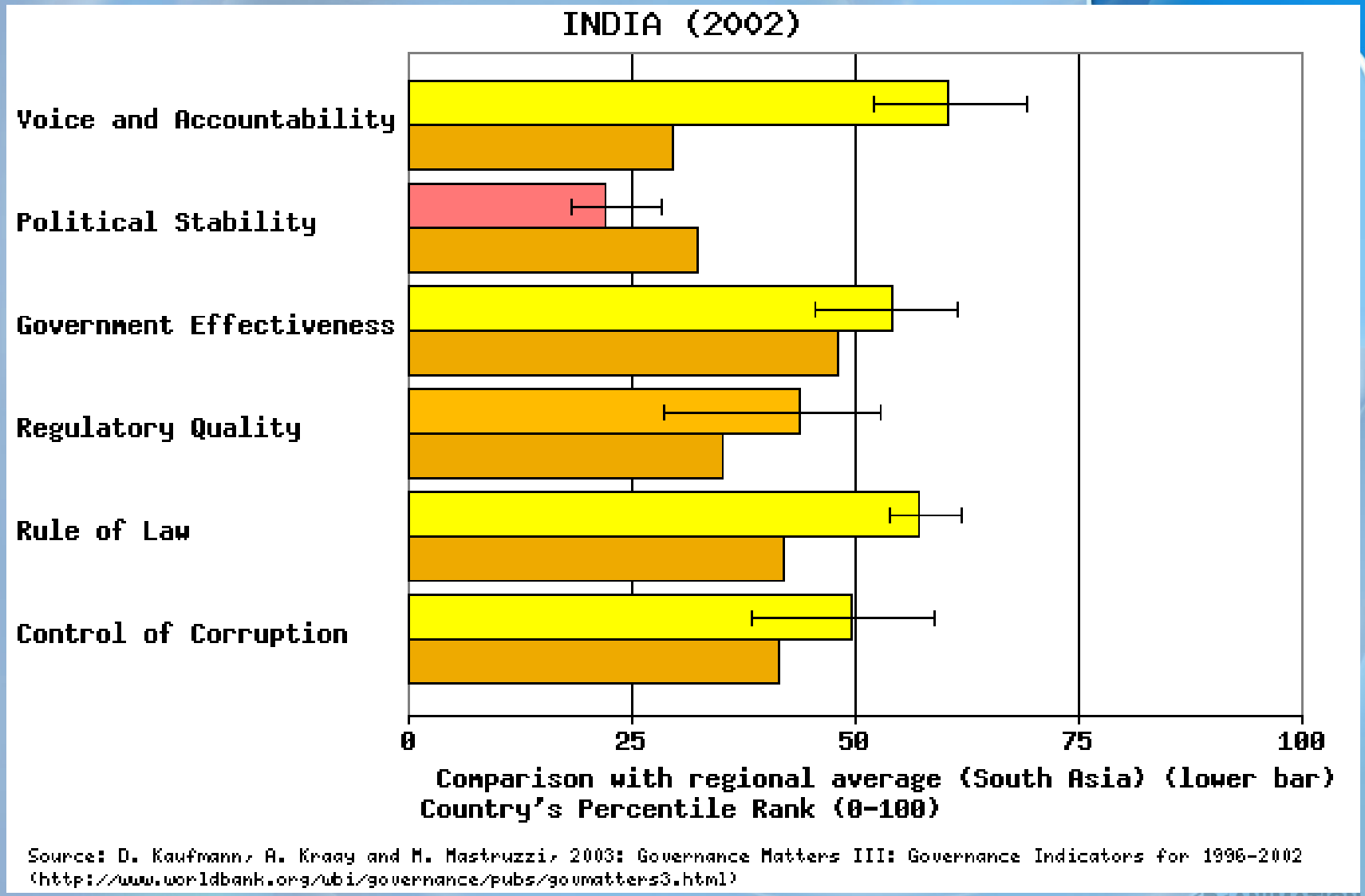
ICT in Transport Sector

Governance - Key Issues

E- Governance

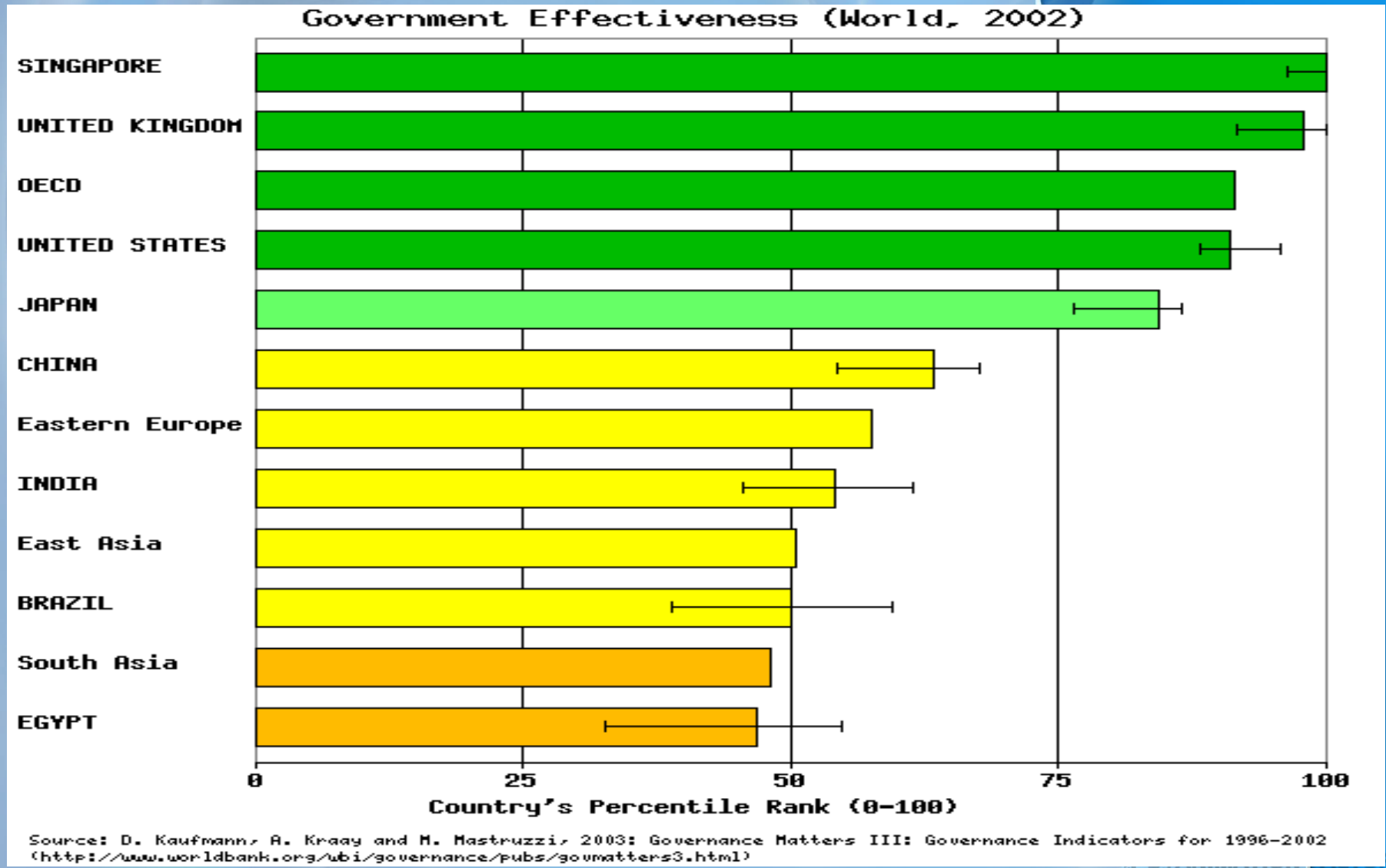
- As per Transparency International, Germany - India 9th most corrupt country
- 4 root causes :
  - Lack of transparency
  - Scarcity
  - Red tape
  - Outdated laws and delays in justice
- Five major players in corruption
- e-Government focus is on efficiency, cost effectiveness, transparency, better monitoring and performance measurement.

E- Governance

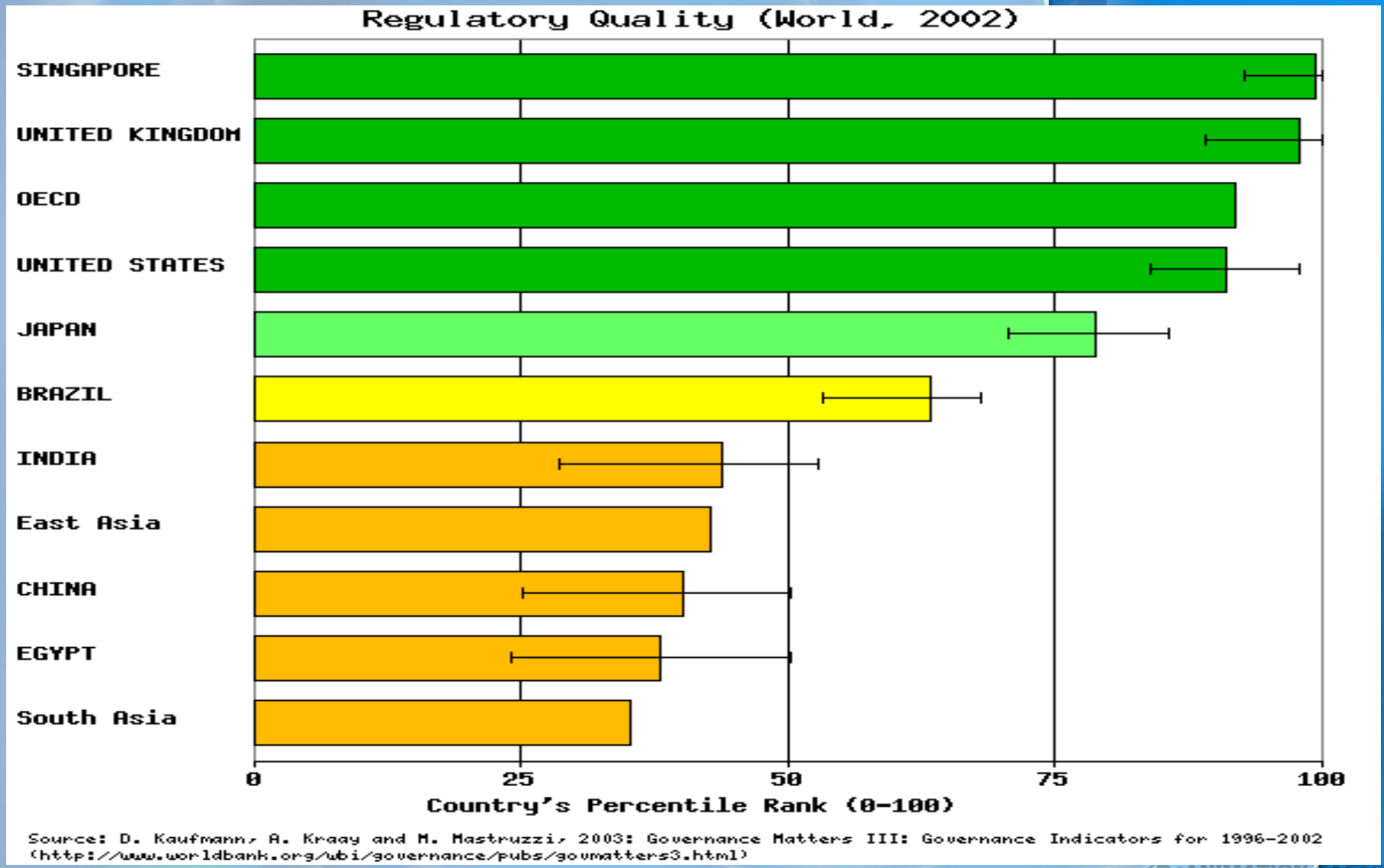


Source: D. Kaufmann, A. Kraay and M. Mastruzzi, 2003: Governance Matters III: Governance Indicators for 1996-2002 (http://www.worldbank.org/wbi/governance/pubs/govmatters3.html)

E- Governance



E- Governance



ICT in Transport Sector

Key ICT Components

E- Governance - Lessons

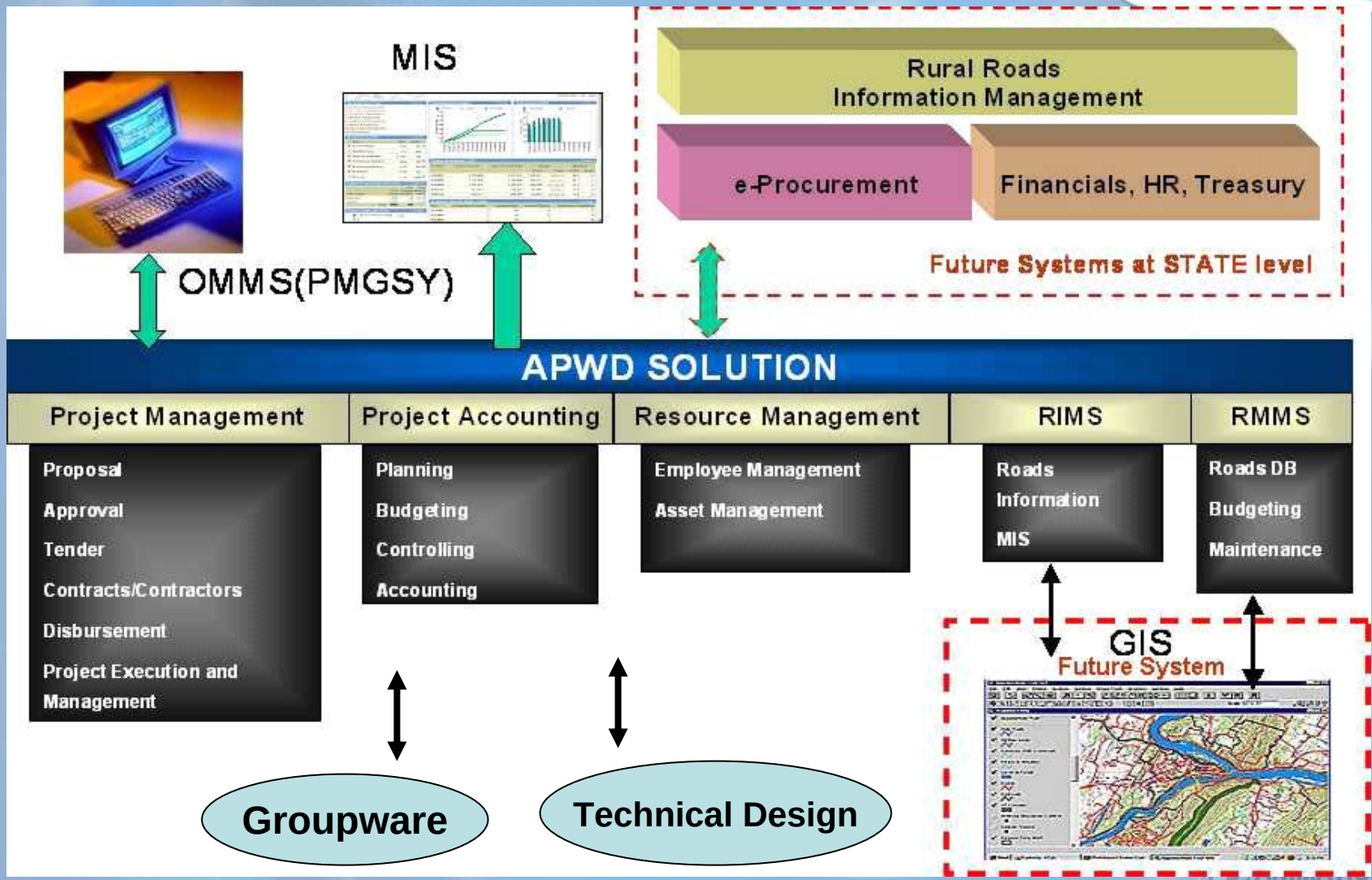
Key Components in Bank Projects

- Roads Maintenance Information Systems
- Roads Information Systems
- Financial Management systems
- Project Management systems
- GIS based Information Systems

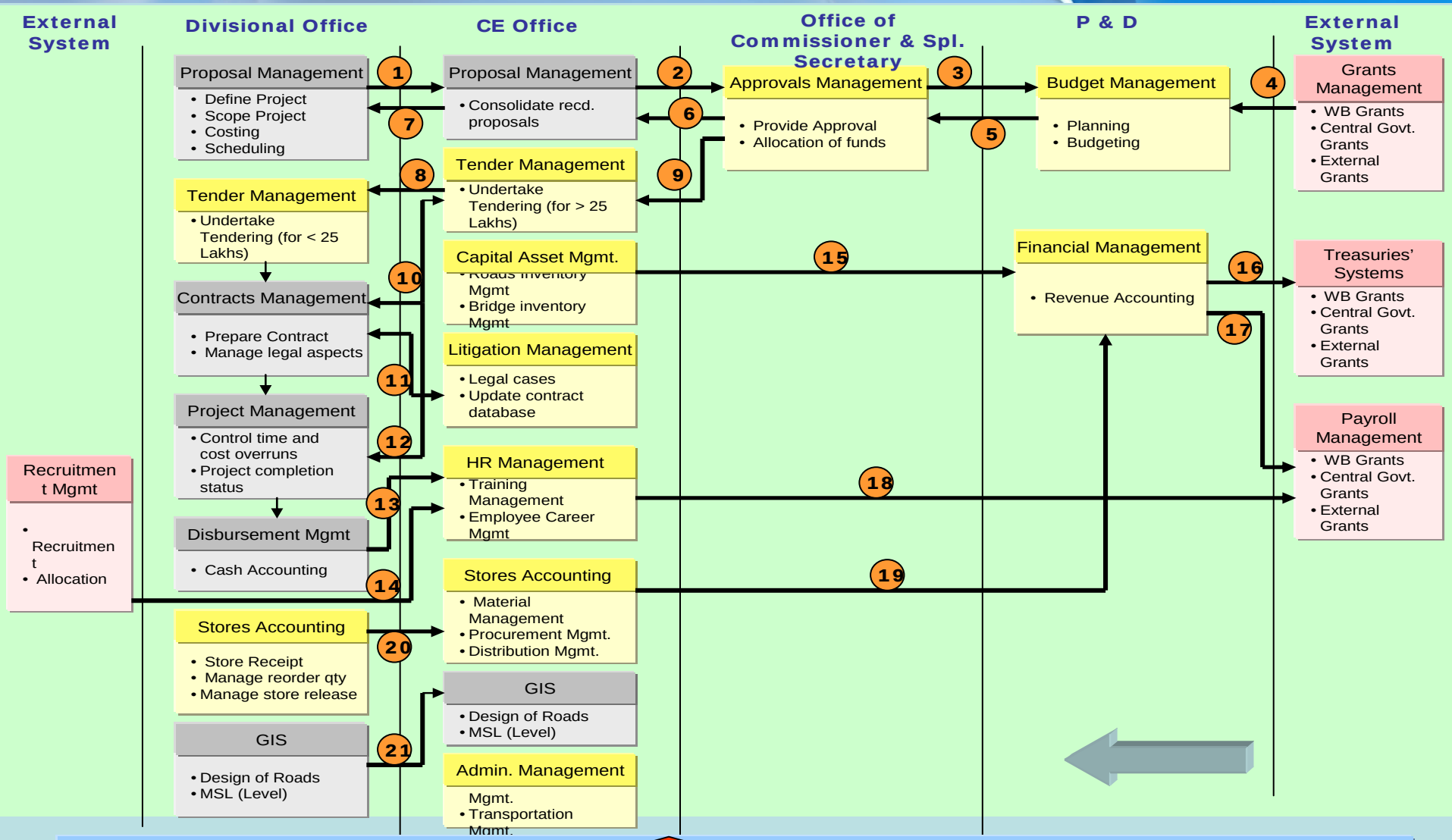
* Capacity Building Components ?

Overall Framework

Assam PWD Roads Project



Key Components



Key Components

Software Strategy

- Open Source Software.
- COTS Vs Bespoke Development.
- Integration Issues.
- Licensing Policy.
- Cost Effectiveness.

Key Components

Hardware Strategy

- Data Center Architecture.
- Server Clusters.
- Environmental Conditions.
- Scalability Criterion.
- Security.
- Concurrency of the Architecture.
- Uninterrupted Power Supply

Key Components

Data Strategy

- Centralized Availability of Data.
- Highest Level Organizational Support for Data Creation Activity.
- Separate Data Management Team.
- Modular Data Entry Teams.
- Right Size the data.(Use Live Data First)
- Data Entry at the point of inception.

Key Components

Network Strategy

- Network Access Requirements.
- Bandwidth Requirements.
- Medium for connectivity.
  - Leased Lines.
  - VSATs
  - Fiber
- Connectivity Time Requirements.
- Access Control.
- Security of Connection.

Key Components

Web Strategy

- Creation of Departmental Intranets.
- Seamless Integration with Internets.
- Use of E-mails as a tool for capacity building.
- Information Dissemination over the web as a tool to Transparency.
- Browser Based GUIs for Internal Applications.
- Multi Lingual Interface.
- Response Times to capture eye balls.

Key Components

People Strategy

- Change Management is Very Important.
- Build capacity - Continued Training .
- Bringing in Corporate Culture.
- Creating IT environment with in the Roads Organization.
- Presence of Effective IT department.
- Buy in from the senior most management with in the organization.
- Reducing Corruption.

Key Components

Roads Maintenance Management system

- Inventories and Condition Assessments.
- Roads Surface Assessment Systems.
- Roads Decision Support Systems.
- Pavement Management Systems.
- Bridges and Dams Management System.
- Information systems for studies including:
  - Traffic Volume assessment study.
  - Vehicle weight age study.
- Budget Requirement Analysis.
- Priority Analysis.

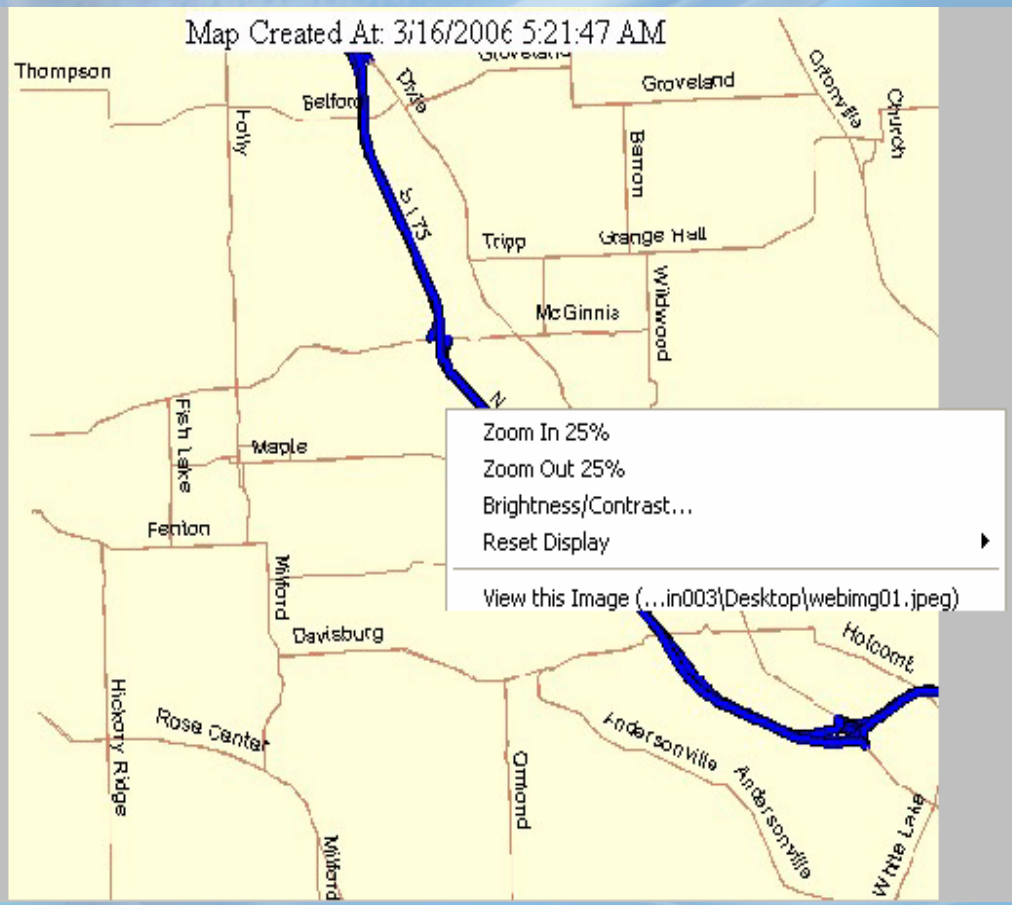
Key Components

Roads Information Systems

- A System to Monitor roads inventory, roads surface condition, pavement deterioration, condition of bridges, drainage systems.
- A Comprehensive MIS for the Roads Inventory in the state.
- Graphical interface to the Roads Inventory.
- Graphical Tools to Monitor Distances etc.
- Graphical DSS support tool

Key Components

GIS Based Systems



ICT in Transport Sector

e-Procurement

e-Procurement

- New Concept being implemented world wide
- Australia & South American countries took the lead
- India – AP Govt, Indian Railways, Karnataka, Chhatisgarh, Assam etc.
- Complex implementation - needs commitment at top levels.

e-Procurement

e-Procurement - Key issues

- Systems functionality
- Standardized solution / PPP
- Cost – Benefits Analysis
- Regulatory Issues
- Security & Authentication
- Technology Model
- Critical success factors

E-Procurement

e-Procurement - Systems functionality

- Generation of Indent/ Tender documents & their approval
- Demand Aggregation
- Procurement Process
  - Tenders, Auctions
  - Reverse Auctions
  - Rate Contract
  - Catalogue Buying
- Bid Evaluation
  - Technical bids
  - Commercial bids
- Award & Purchase Order
- Supply Management
- Quality Management
- Inventory Management – e-logistics
- Payments Management - e-payments
- MIS & EIS

e-Procurement - Functionality

Item To be procured	High Value, Low Volume		Low Value, High Volume	
	Code	Example	Code	Example
Goods	**HG**	Medical Equipment, Engineering Equipment, Scientific Equipment ..	**LG**	Medicines, PCs & Peripherals Stationery..
Services	**HS**	Consultancy Services, e-Government Services, Legal Services, Professional Services	**LS**	Maintenance Services Facility Mgt Services Printing, Dispatch & Communication Services
Civil Works	**HW**	Bridges, National Highways, Airports, Ports, Building Complexes	**LW**	Small roads, Small buildings, Maintenance works

Source : NISG

e-Procurement

e-Procurement

Standardized solution / PPP Models

- Customized solutions
- Licensing Models for Products
- Service Provider Model
- JV model
- Others – BOT, BOOT etc

e-Procurement : Cost – Benefits Analysis

- Increased competition (MERX in Canada reported 15% savings and the state of Virginia reported that the number of bids received increased from 12-15 to about 40-80 bids)
- Reduced expenses in preparing purchase order (the state of North Carolina reported savings of 35 million USD)
- Reduction in time taken for processing purchase related administration (Brazil reports 70% reduction in administrative work)
- Savings in operational costs (Guatemala reported savings of 302,000 USD)
- Purchase of office supplies (Philippines claims to have saved 20-40% savings) and through the use of e-catalogue (Chile reports to have saved 14%)
- Lower bid prices (Brazil claims to have saved 20% due to lower bid prices and North Carolina claims savings of 127 million USD)
- Process improvements benefiting the private sector (the Korean government estimates private sector to have saved 2.8 billion USD a year; 90% of such savings is allocated to the private sector)

e-Procurement

Regulatory Issues

- Mandated in many countries – Chile, Phillipines etc.
- Executive Order - Law
- Regulatory body

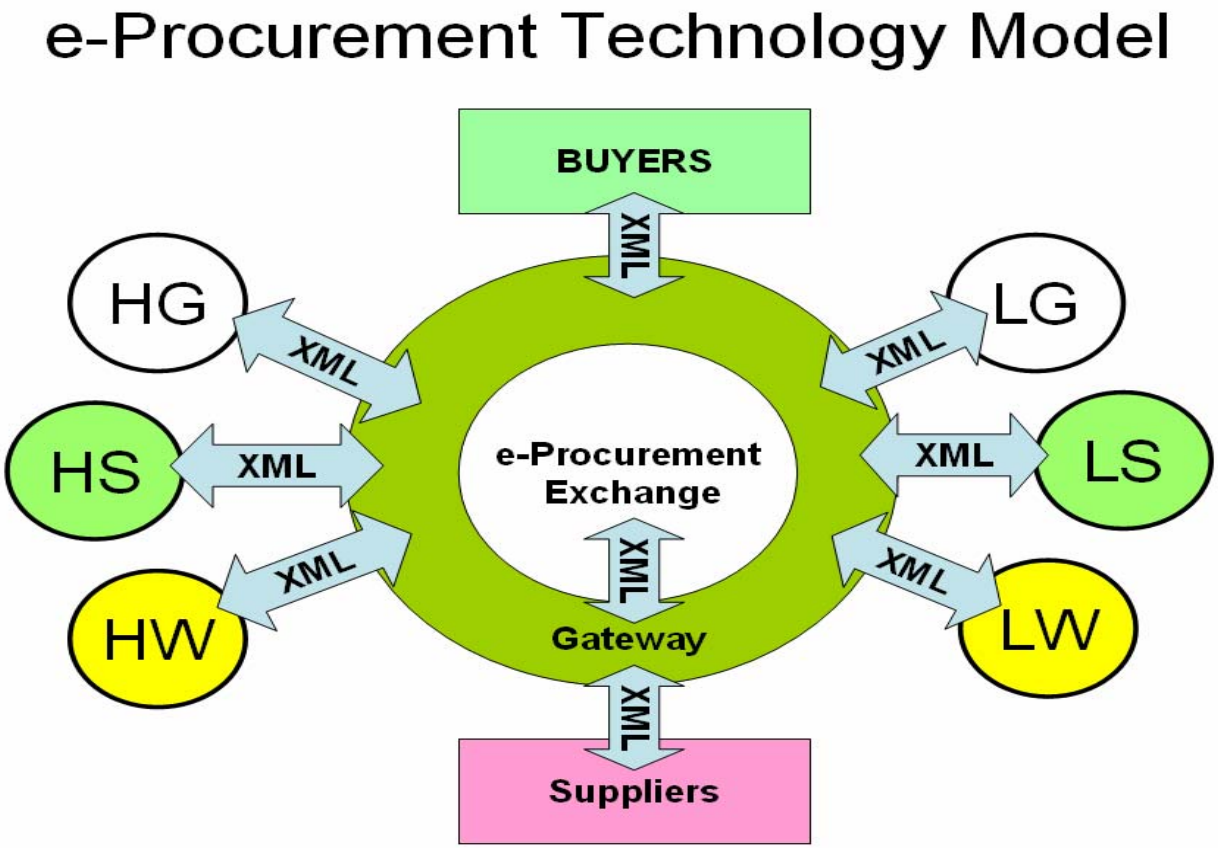
e-Procurement

Security & Authentication

- Supplier registration
- PKI & smart cards
- Security Mechanisms
- Payment Gateways
- Internal checks and controls

e-Procurement

e-Procurement - Technology Model



Source : NISG

ICT in Transport Sector

Lessons Learned

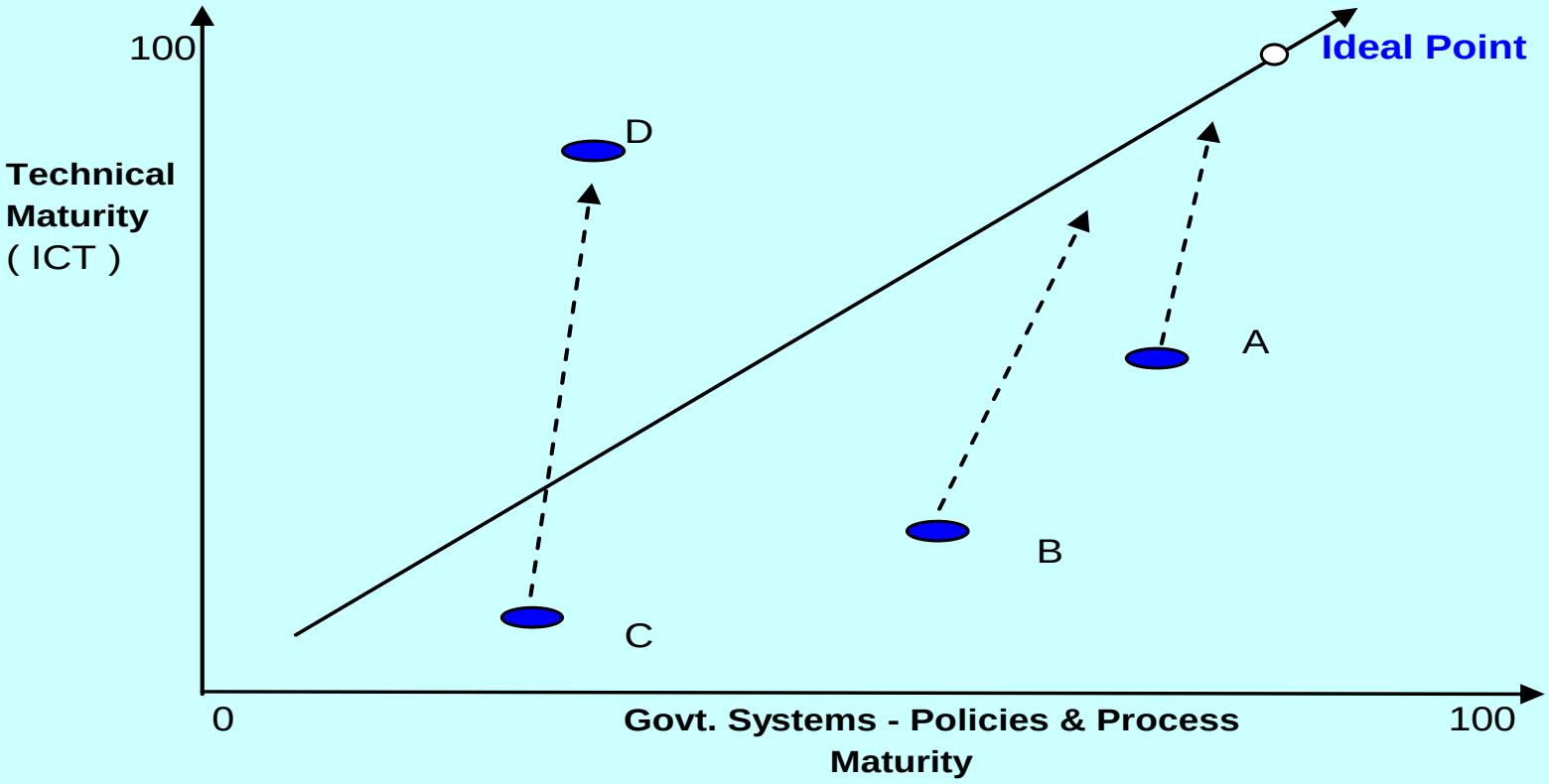
E- Governance - Lessons

Need for a Overall Framework

- Piecemeal approach is normally ineffective
- Need to develop a Framework - to achieve benefits of integration & effectiveness
- Adhoc approach, standalone systems and multiplicity of databases create more problems
- Business Process Re-engineering is the key.

E- Governance - Lessons

Need for a Overall Strategy

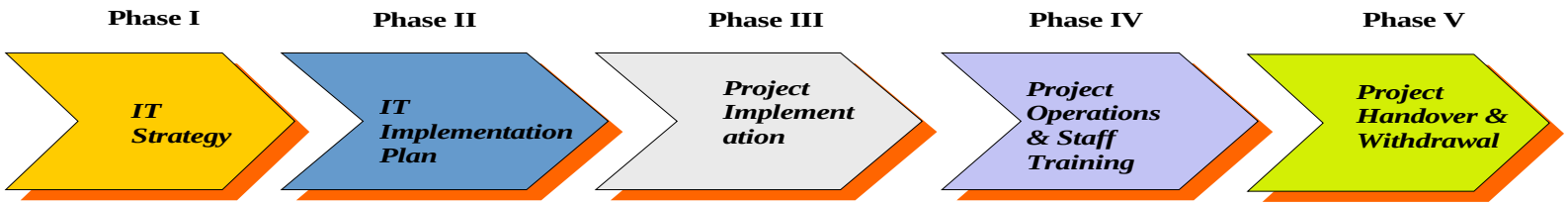


E- Governance - Lessons

Industry Best Practices

Information Systems Projects – Standards

Planned Project Phases - Large Projects



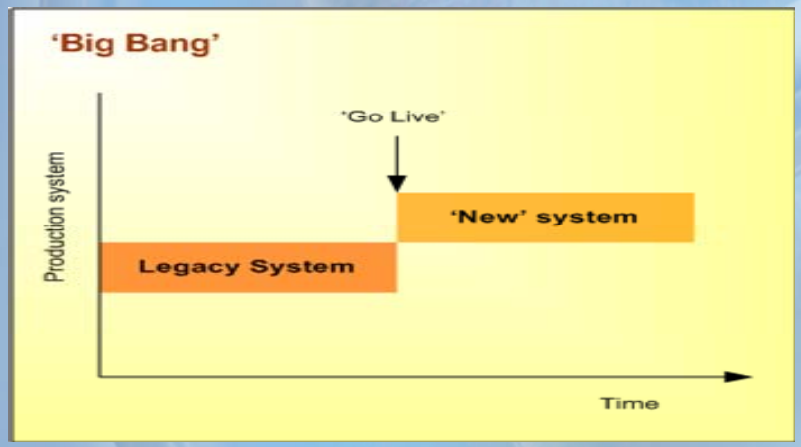
	Phase I	Phase II	Phase III	Phase IV	Phase V
Duration	3 Months	3 Months	1 Year	1 Year	6 Months
Key Activities	υ Meet client staff and senior management. υ Confirm Project vision and objectives. υ Take inputs from institutional study. υ Develop understanding of client organization,systems, process locations, Staffing Etc. υ Develop long / medium Term IT vision / strategy	υ Detailed system study υ Review existing systems, policies, procedures, staff organization. υ Targeted interviews with staff & management. υ Identify core activities, Data size, transaction size etc. υ Develop detailed IT implementation & operation plan.	υ Purchase and install Hardware / Software / Network Equipment. υ BPR Implementation υ Testing of Hardware / Software / Network Equipment. υ Master Data creation. υ Modules / System Intergration Testing. υ Test Run. υ Parallel Run. υ Change Mgt. processes υ Staff Training υ New Staff recruitment	υ New system fully operational. υ Discontinue old systems. υ Continuous training, support and handholding to client staff. υ Support Data Entry process and Reporting. υ Support Information System operations and trouble-shooting.	υ Develop Handng-Over procedures. υ Handover systems by modules / subsystems. υ Withdraw from Client Organization.
Deliverables	υ High Level IT strategy υ Project Cost Estimates υ Project Approach υ Implementation Plan υ Project Organisation	υ Detailed Implementation Plan. υ Hardware / Software / Network plan & RFP's. υ Staff and Project Organization. υ Project Costing υ Project Schedule. υ BPR Study Plan υ Change Mgt. Plan	υ Systems acquisition υ Systems installed and tested υ Staff recruitment υ Staff training completed υ BPR Completed υ Change Mgt. Completed υ Systems in parallel Run.	υ System fully operational. υ Troubleshooting υ Handholding υ Support and Training. υ Complete one year cycle	υ Handover procedures υ Handover completed υ User Sign off υ Client staff takes over systems.

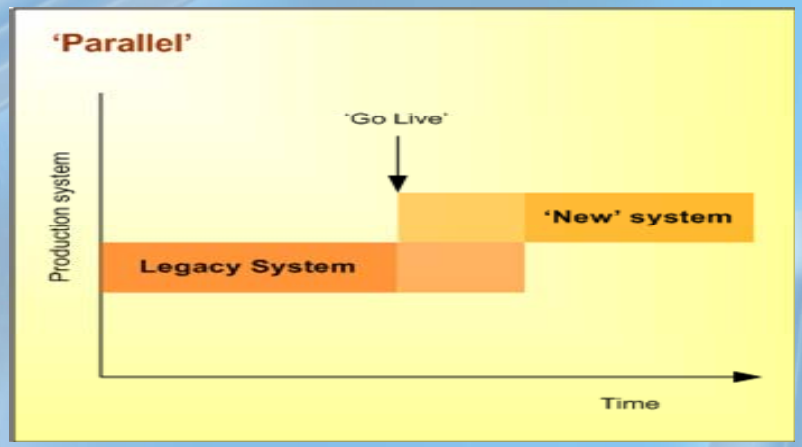
The World Bank / Informatics Advisory Service *Shashank Ojha /*

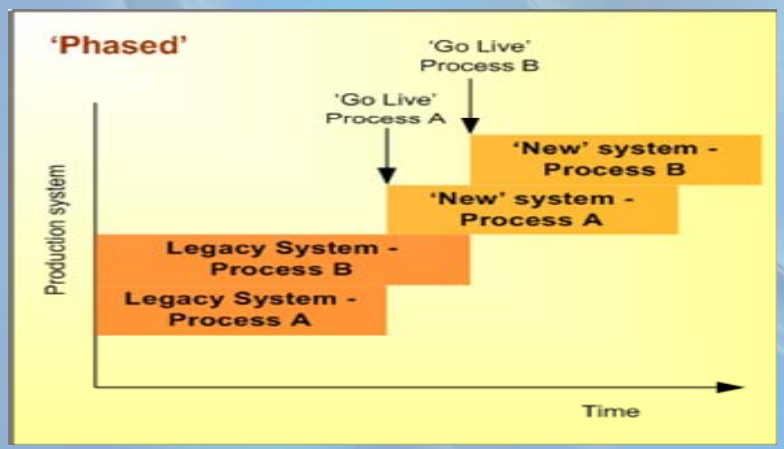
E- Governance - Lessons

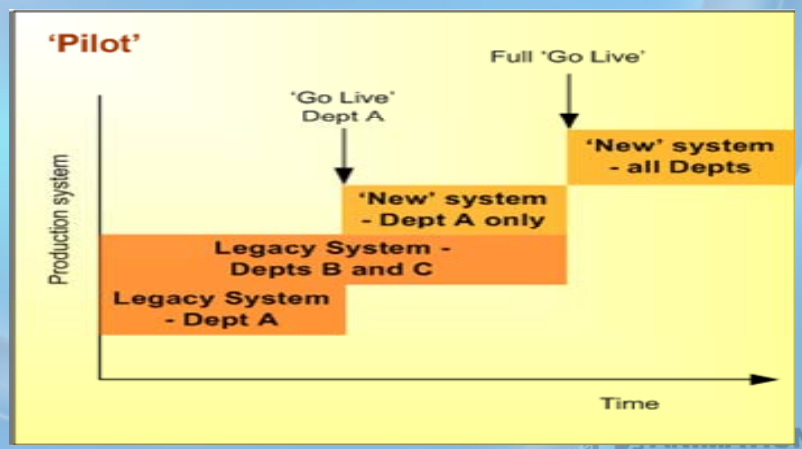
Industry Best Practices

Implementation Models









Focus on Project Management

Project Management

Project Management - Challenges

OBJECTIVES

PHY. PROGRESS

FIN. MGT

LEGAL

DISBURSEMENT

SAFEGUARDS

M & E

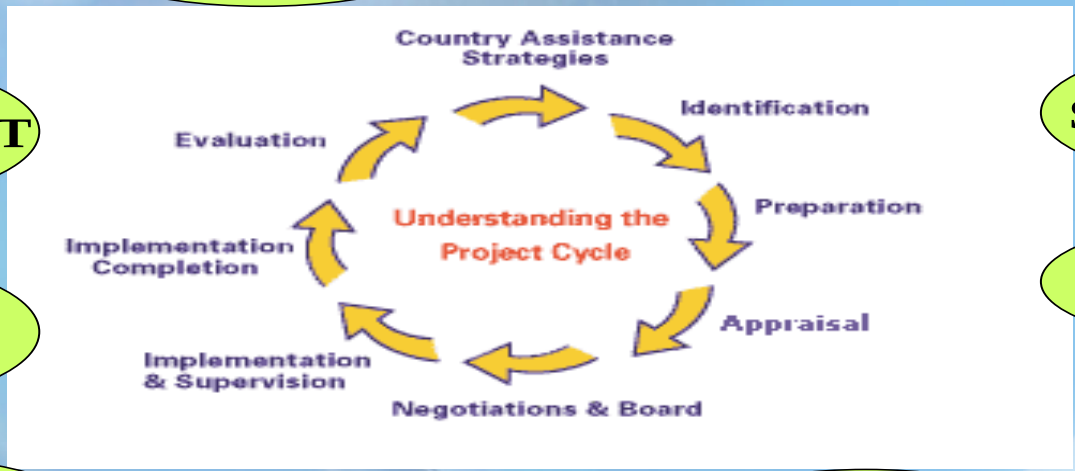
STAFFING

CNTRY RISK

RISK MGT

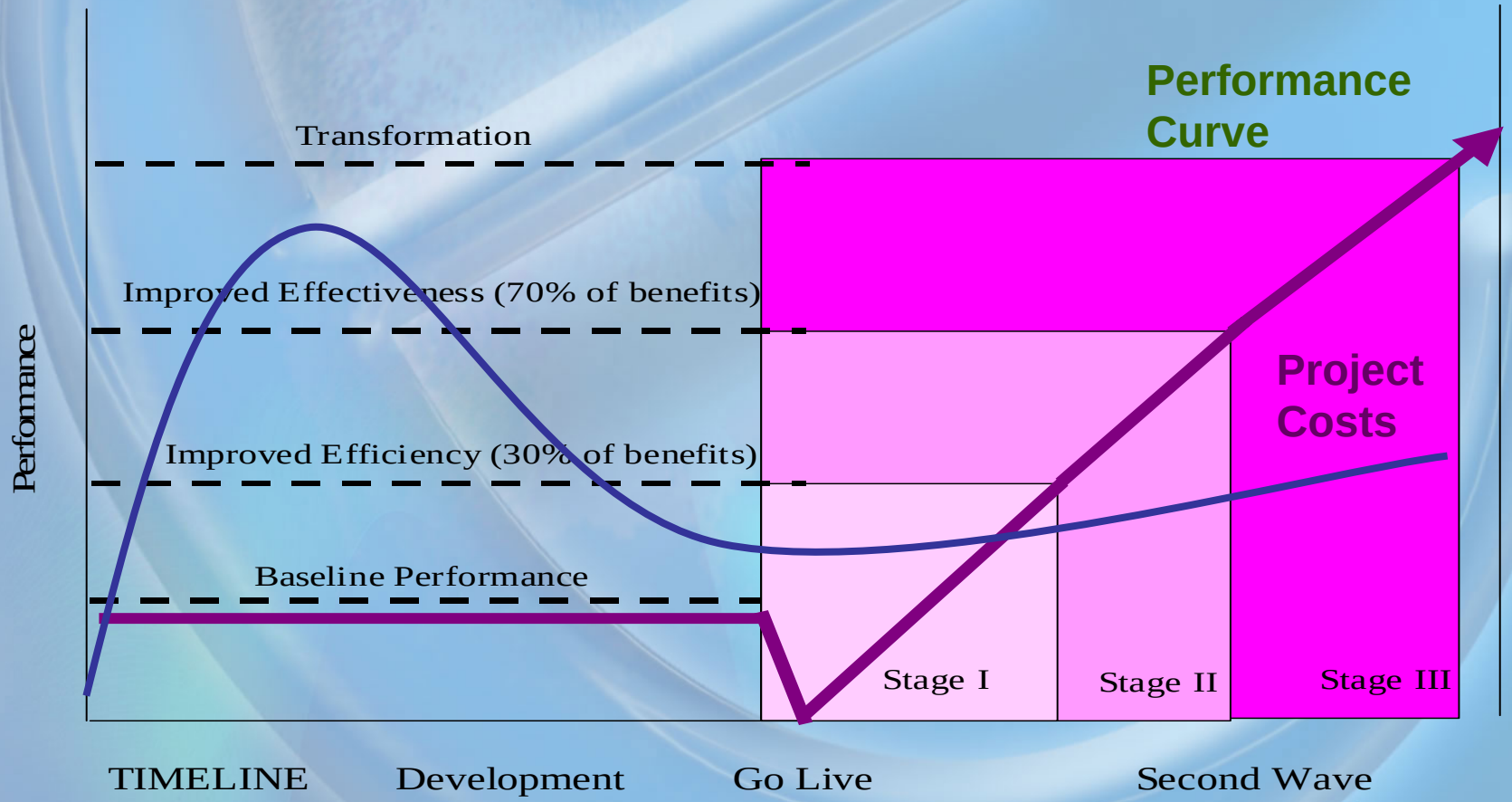
FUNDS FLOW

PROCUREMENT



E- Governance - Lessons

Need to 'Manage the Curve'



ICT in Transport Sector

Thank you.